Amendments to the Claims:

A listing of the entire set of pending claims (including amendments to the claims, if any) is submitted herewith per 37 CFR 1.121. This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) An apparatus comprising:

means for receiving an (x,y) coordinate of a modulated signal;

means for determining a first value according to the equation $-2x(\hat{I}_i-\hat{I}_j)$, wherein $\hat{I}_i$ is ~~the~~an I component of a first symbol closest to the (x,y) coordinate and $\hat{I}_j$ is the I component of a second symbol closest to the (x,y) coordinate with a bit value opposite of the corresponding bit value of the first symbol;

means for determining a second value according to the equation $2y(\hat{Q}_i-\hat{Q}_j)$, wherein $\hat{Q}_i$ is ~~the~~a Q component of the first symbol and $\hat{Q}_j$ is the Q component of the second symbol;

means for determining a third value equivalent to the sum of $A_0(\hat{I}_i^2+\hat{Q}_i^2)$ and $-A_0(\hat{I}_j^2+\hat{Q}_j^2)$, wherein A_0 is ~~the~~a minimum amplitude;

means for determining a log-likelihood ratio (LLR) as a sum of the first value, the second value, and the third value; and

means for transmitting the LLR to a decoder.

2. (Currently Amended) The apparatus of Claim 1, further comprising means for storing the value of at least one of $2(|\hat{I}_i-\hat{I}_j|)$, $2(|\hat{Q}_i-\hat{Q}_j|)$, $A_0(\hat{I}_i^2+\hat{Q}_i^2)$, $-A_0(\hat{I}_j^2+\hat{Q}_j^2)$, the sign of $2x(\hat{I}_i-\hat{I}_j)$, and the sign of $2y(\hat{Q}_i-\hat{Q}_j)$ is ~~stored~~ in memory.

3. (Original) The apparatus of Claim 1, wherein the means for determining the first value comprises an adder and a sign inverter connected to the adder.

4. (Original) The apparatus of Claim 1, wherein the means for determining the second value comprises an adder and a sign inverter connected to the adder.

5. (Currently Amended) An method for determining the log-likelihood ratio, the method comprising the steps of:

receiving an (x,y) coordinate of a received signal;

determining a first value according to the equation $-2x(\hat{I}_i-\hat{I}_j)$, wherein $\hat{I}_i$ is ~~the~~an I component of a first symbol closest to the (x,y) coordinate and $\hat{I}_j$ is the I component of a second symbol closest to the (x,y) coordinate with a bit value opposite of the corresponding bit value of the first symbol;

determining a second value according to the equation $2y(\hat{Q}_i-\hat{Q}_j)$, wherein $\hat{Q}_i$ is ~~the~~a Q component of the first symbol and $\hat{Q}_j$ is the Q component of the second symbol;

determining a third value equivalent to the sum of $A_0(\hat{I}_i^2+\hat{Q}_i^2)$ and $-A_0(\hat{I}_j^2+\hat{Q}_j^2)$, wherein A_0 is ~~the~~a minimum amplitude; and

determining a log-likelihood ratio as the sum of the first value, the second value, and the third value.

6. (New) An apparatus comprising:

a receiver, which receives an (x,y) coordinate of a modulated signal;

a demodulator, which is adapted to:

determine a first value according to the equation $-2x(\hat{I}_i-\hat{I}_j)$, wherein $\hat{I}_i$ is an I component of a first symbol closest to the (x,y) coordinate and $\hat{I}_j$ is the I component of a second symbol closest to the (x,y) coordinate with a bit value opposite of the corresponding bit value of the first symbol; to determine a second value according to the equation $2y(\hat{Q}_i-\hat{Q}_j)$, wherein $\hat{Q}_i$ is a Q component of the first symbol and $\hat{Q}_j$ is the Q component of the second symbol; to determine a third value equivalent to the sum of $A_0(\hat{I}_i^2+\hat{Q}_i^2)$ and $-A_0(\hat{I}_j^2+\hat{Q}_j^2)$, wherein A_0 is the minimum amplitude; and to determine a log-likelihood ratio (LLR) as a sum of the first value, the second value, and the third value; and

a decoder.